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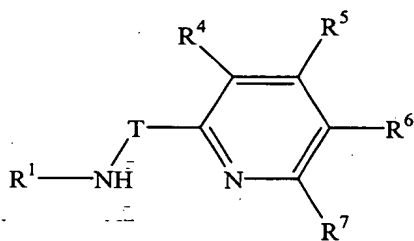
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What is claimed is:

1. A process for the polymerization of monomers, said process employing a composition comprising:

(1) a ligand characterized by the following general formula:



wherein R¹ is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and combinations thereof.

10 T is -CR²R³- and R² and R³ are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof;

15 R⁴, R⁵, R⁶ and R⁷ are each independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof; and optionally, any

20 combination of R¹, R², R³, R⁴, R⁵, or R⁶ may be joined together in a ring structure;

provided that either R³ or R⁷ is selected only from the group consisting of aryl, substituted aryl, heteroaryl and substituted heteroaryl;

(2) a metal precursor compound characterized by the general formula Hf(L)_n wherein each L is independently selected from the group consisting of halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl,

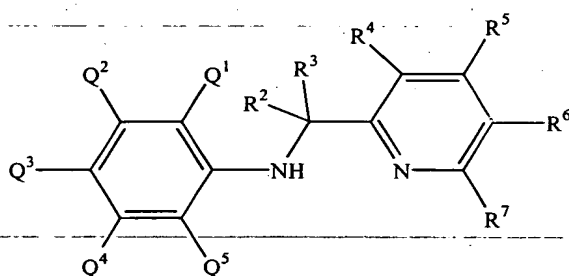
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heteroaryl, substituted heteroaryl, alkoxy, aryloxy, hydroxy, boryl, silyl, amino, amine, hydrido, allyl, diene, seleno, phosphino, phosphine, carboxylates, thio, 1,3-dionates, oxalates, carbonates, nitrates, sulphates, ethers, thioethers and combinations thereof or optionally two or more L groups are joined into a ring

5 structure; n is 1, 2, 3, 4, 5, or 6; and

(3) optionally, at least one activator.

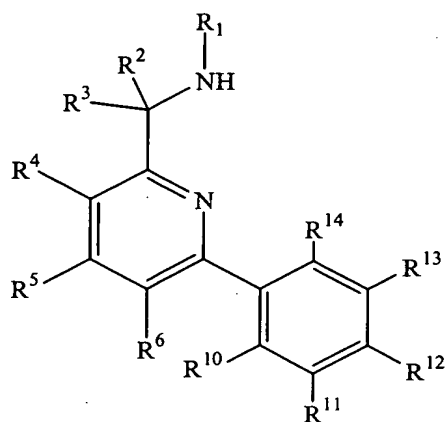
2. The process of claim 1, wherein said ligand is characterized by the general formula:



10 such that E is carbon and wherein Q^1 , Q^2 , Q^3 , Q^4 and Q^5 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, nitro, and combinations thereof;

15 optionally two of Q^2 , Q^3 and Q^4 are joined together in a ring structure.

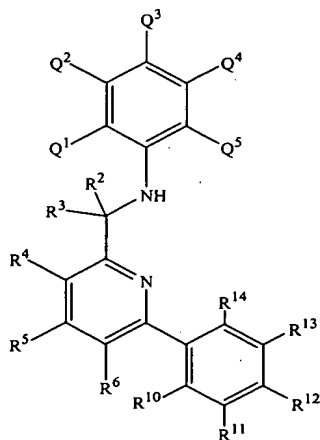
3. The process of claim 1, wherein said ligand is characterized by the general formula:



wherein R^{10} , R^{11} , R^{12} and R^{13} are each independently selected from the group consisting of hydrogen, halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, nitro, and combinations thereof; optionally, two or more R^{10} , R^{11} , R^{12} and R^{13} groups may be joined to form a fused ring system having from 3-50 non-hydrogen atoms; and

R^{14} is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof.

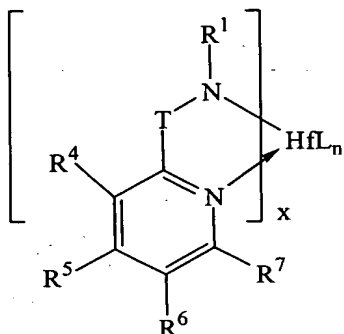
4. The process of claim 3, wherein said ligand is characterized by the formula:



wherein Q^1 , Q^2 , Q^3 , Q^4 and Q^5 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, nitro, and combinations thereof; optionally two of Q^2 , Q^3 and Q^4 are joined together in a ring structure.

5. A process for the polymerization of monomers, said process employing

a metal-ligand complex characterized by the following formula:



wherein R^1 is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and combinations thereof.

T is $-CR^2R^3-$ and R^2 and R^3 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof;

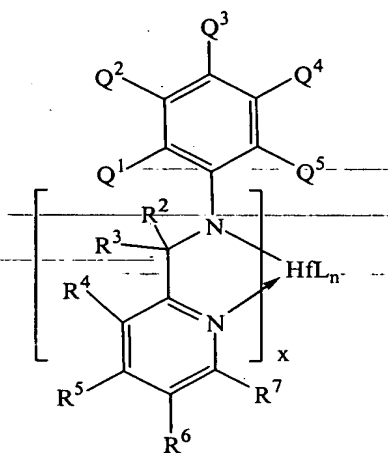
R^4 , R^5 , R^6 and R^7 are each independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof; and optionally, any combination of R^1 , R^2 , R^3 , R^4 , R^5 , or R^6 may be joined together in a ring structure;

provided that either R^3 or R^7 is selected only from the group consisting of aryl, substituted aryl, heteroaryl and substituted heteroaryl;

each L is independently selected from the group consisting of halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, hydroxy, boryl, silyl, amino, amine, hydrido, allyl, diene, seleno, phosphino, phosphine, carboxylates, thio, 1,3-dionates, oxalates, carbonates, nitrates, sulphates, ethers, thioethers and combinations thereof or optionally two or more L groups are joined into a ring

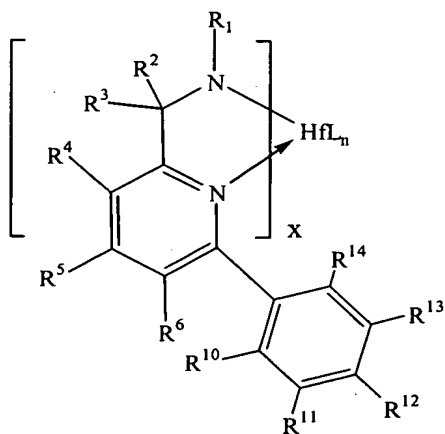
structure; n is 1, 2, 3, 4, 5, or 6; and x is 1 or 2.

6. The process of claim 5, wherein said metal complex is characterized by the formula:



- 5 wherein Q^1 , Q^2 , Q^3 , Q^4 and Q^5 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxyl, aryloxyl, silyl, boryl, phosphino, amino, thio, seleno, nitro, and combinations thereof; optionally two of Q^2 , Q^3 and Q^4 are joined together in a ring structure; and $x = 1$.

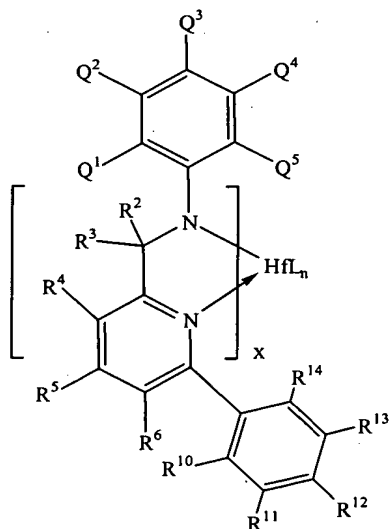
7. The process of claim 5, wherein said complex is characterized by the formula:



wherein R^{10} , R^{11} , R^{12} and R^{13} are each independently selected from the group consisting of hydrogen, halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, nitro, and combinations thereof; optionally, two or more R^{10} , R^{11} , R^{12} and R^{13} groups may be joined to form a fused ring system having from 3-50 non-hydrogen atoms; and

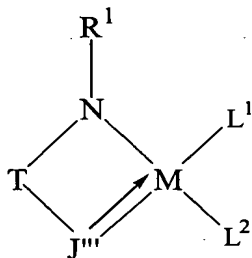
R^{14} is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof; and $x = 1$.

8. The process of claim 7, wherein said complex is characterized by the general formula:



wherein Q^1 , Q^2 , Q^3 , Q^4 and Q^5 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, nitro, and combinations thereof; optionally two of Q^2 , Q^3 and Q^4 are joined together in a ring structure.

9. A process for the polymerization of monomers, said process employing a metal complex characterized by the formula:



where M is zirconium or hafnium;

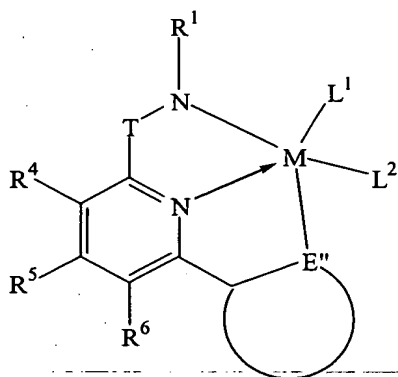
5 wherein R¹ is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and combinations thereof.

10 T is a bridging group selected group consisting of $-CR^2R^3-$ and $-SiR^2R^3-$ with R² and R³ being independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxyl, aryloxyl, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof;

15 J''' being selected from the group of substituted heteroaryls with 2 atoms bonded to the metal M, at least one of those 2 atoms being a heteroatom, and with one atom of J''' is bonded to M via a dative bond, the other through a covalent bond; and

20 L¹ and L² are independently selected from the group consisting of halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, hydroxy, boryl, silyl, amino, amine, hydrido, allyl, diene, seleno, phosphino, phosphine, carboxylates, thio, 1,3-dionates, oxalates, carbonates, nitrates, sulphates, ethers, thioethers and combinations thereof or optionally two or more L groups are joined into a ring structure.

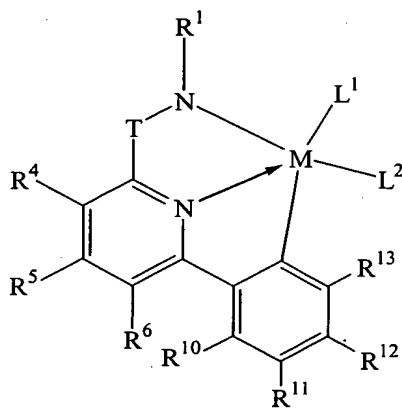
25 10. The process of claim 9, wherein said complex is characterized by the formula:



wherein each of R^4 , R^5 and R^6 is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof; and optionally, any combination of R^1 , R^2 , R^3 , R^4 , R^5 , or R^6 may be joined together in a ring structure; and

E'' is either carbon or nitrogen and is part of a cyclic aryl, substituted aryl, heteroaryl, or substituted heteroaryl group.

11. The process of claim 10, wherein said complex is characterized by the formula:



wherein R^{10} , R^{11} , R^{12} and R^{13} are each independently selected from the group consisting of hydrogen, halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy,

wherein E is either carbon or nitrogen,

Q¹ and Q⁵ are substituents on the R¹ ring at a position ortho to E, with Q¹ and Q⁵ being independently selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl and silyl, but provided that Q¹ and Q⁵ are not both methyl; and

Q^{"_q} represents additional possible substituents on the ring, with q being 1, 2, 3, 4 or 5 and Q["] being selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, ~~heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl,~~
substituted heteroaryl, alkoxyl, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof.

14. The process of either of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12, wherein said process employs at least one activator.

15. The process of claim 14 wherein said at least one activator comprises an ion forming activator and another reagent selected from the group consisting of a group 13 reagent, a divalent reagent and an alkali metal reagent.

16. The process of either of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12, wherein said process employs at least one monomer that is an olefin, diolefin or unsaturated compound.

20. 17. The process of claim 16, wherein there are at least 2 monomers.

18. The process of claim 17, wherein said at least 2 monomers comprise ethylene and an α -olefin.

19. The process of claim 17, wherein said at least 2 monomers comprise ethylene and either 1-octene or 1-hexene.

25. 20. The process of claim 17, wherein there are at least 3 monomers in the process, with said monomers comprising ethylene, an α -olefin and a diolefin.

21. The process of claim 17, wherein said two monomers comprise ethylene and 1-octene.

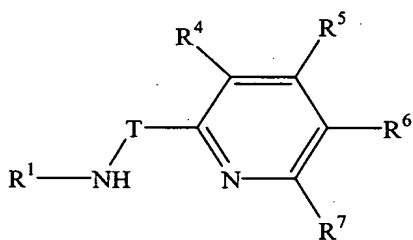
22. The process of claim 21, wherein R^3 is either aryl or substituted aryl.

5 23. The process of claim 21, wherein R^1 is selected from the group consisting of mesityl; 2-Me-naphthyl; 2,6-(Pr^i)₂-C₆H₃-; 2- Pr^i -6-Me-C₆H₃-; 2,6-Et₂-C₆H₃-; and 2-sec-butyl-6-Et-C₆H₃-.

24. The process of claim 21, wherein, when present, R^7 is selected from the group consisting of phenyl, naphthyl, mesityl, anthracenyl and phenanthrenyl.
10

25. A catalyst for the production of a polymer comprising a composition comprising:

(1) a ligand characterized by the following general formula:



15 wherein R^1 is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and combinations thereof.

T is $-CR^2R^3-$ and R^2 and R^3 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof;

R^4 , R^5 , R^6 and R^7 are each independently selected from the group consisting of
25 hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl,

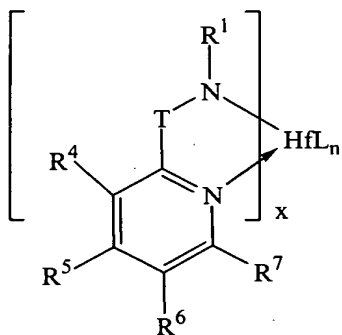
substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxyl, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof; and optionally, any combination of R^1 , R^2 , R^3 , R^4 , R^5 , or R^6 may be joined together in a ring structure;

5 provided that either R^3 or R^7 is selected only from the group consisting of aryl, substituted aryl, heteroaryl and substituted heteroaryl;

(2) a metal precursor compound characterized by the general formula $Hf(L)_n$ wherein each L is independently selected from the group consisting of halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted
 10 heteroalkyl heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, hydroxy, boryl, silyl, amino, amine, hydrido, allyl, diene, seleno, phosphino, phosphine, carboxylates, thio, 1,3-dionates, oxalates, carbonates, nitrates, sulphates, ethers, thioethers and combinations thereof or optionally two or more L groups are joined into a ring
 15 structure; n is 1, 2, 3, 4, 5, or 6; and

(3) optionally, at least one activator.

26. A catalyst for the production of a polymer comprising at least one activator and a metal-ligand complex characterized by the following formula:



20 wherein R^1 is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and combinations thereof.

T is $-CR^2R^3-$ and R^2 and R^3 are independently selected from the group
 25 consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl,

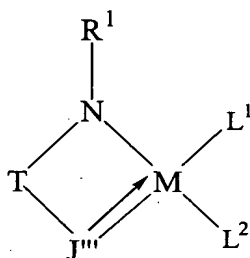
heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof;

R^4 , R^5 , R^6 and R^7 are each independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof; and optionally, any combination of R^1 , R^2 , R^3 , R^4 , R^5 , or R^6 may be joined together in a ring structure;

provided that either R^3 or R^7 is selected only from the group consisting of aryl, substituted aryl, heteroaryl and substituted heteroaryl;

each L is independently selected from the group consisting of halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, hydroxy, boryl, silyl, amino, amine, hydrido, allyl, diene, seleno, phosphino, phosphine, carboxylates, thio, 1,3-dionates, oxalates, carbonates, nitrates, sulphates, ethers, thioethers and combinations thereof or optionally two or more L groups are joined into a ring structure; n is 1, 2, 3, 4, 5, or 6; and x is 1 or 2.

27. A catalyst for the production of a polymer comprising at least one activator and a metal complex characterized by the formula:



where M is zirconium or hafnium;

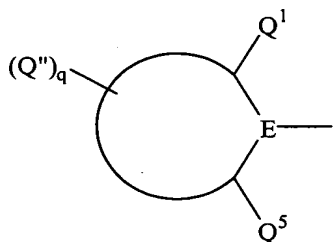
wherein R^1 is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and combinations thereof.

T is a bridging group selected group consisting of $-\text{CR}^2\text{R}^3-$ and $-\text{SiR}^2\text{R}^3-$ with R^2 and R^3 being independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof;

J^{'''} being selected from the group of substituted heteroaryls with 2 atoms bonded to the metal M, at least one of those 2 atoms being a heteroatom, and with one atom of J^{'''} is bonded to M via a dative bond, the other through a covalent bond; and

L¹ and L² are independently selected from the group consisting of halide, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxy, aryloxy, hydroxy, boryl, silyl, amino, amine, hydrido, allyl, diene, seleno, phosphino, phosphine, carboxylates, thio, 1,3-dionates, oxalates, carbonates, nitrates, sulphates, ethers, thioethers and combinations thereof or optionally two or more L groups are joined into a ring structure.

28. The catalyst of either of claims 25, 26 or 27, wherein R¹ is characterized by the general formula:



wherein E is either carbon or nitrogen,

Q¹ and Q⁵ are substituents on the R¹ ring at a position ortho to E, with Q¹ and Q⁵ are independently selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl and silyl, but provided that Q¹ and Q⁵ are not both methyl; and

Q^{''}_q represents additional possible substituents on the ring, with q being 1, 2, 3, 4 or 5 and Q^{''} being selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl,

heterocycloalkyl, substituted heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkoxyl, aryloxyl, silyl, boryl, phosphino, amino, thio, seleno, halide, nitro, and combinations thereof.

29. The catalyst of either of claims 25, 26 or 27, wherein R³ is
5 selected from the group consisting of benzyl, phenyl, naphthyl, 2-biphenyl, 2-dimethylaminophenyl, 2-methoxyphenyl, anthracenyl, mesityl, 2-pyridyl, 3,5-dimethylphenyl, o-tolyl, and phenanthrenyl.

30. The catalyst of either of claim 28, wherein Q¹ and Q⁵ are,
independently, selected from the group consisting of -CH₂R¹⁵, -CHR¹⁶R¹⁷ and
10 methyl, provided that not both Q¹ and Q⁵ are methyl, wherein R¹⁵ is selected from the group consisting of alkyl, substituted alkyl, aryl and substituted aryl; R¹⁶ and R¹⁷ are independently selected from the group consisting of alkyl, substituted
alkyl, aryl and substituted aryl; and optionally R¹⁶ and R¹⁷ are joined together in a
ring structure having from 3-50 non-hydrogen atoms.

15 31. The catalyst of claim 29, wherein Q², Q³, and Q⁴ are each hydrogen and Q¹ and Q⁵ are both isopropyl; or both ethyl; or both sec-butyl; or Q¹ is methyl and Q⁵ is isopropyl; or Q¹ is ethyl and Q⁵ is sec-butyl.

32. The catalyst of claim 28, wherein R¹ is selected from the group
consisting of mesityl; 2-Me-naphthyl; 2,6-(Prⁱ)₂-C₆H₃-; 2-Prⁱ-6-Me-C₆H₃-;
20 2,6-Et₂-C₆H₃-; and 2-sec-butyl-6-Et-C₆H₃-.

33. The catalyst of either of claims 25, 26 or 27, wherein R⁷ is
selected from the group consisting of phenyl, naphthyl, mesityl, anthracenyl and
phenanthrenyl.

